

I CLAIM:

1. A method, using a programmable-matched filter and a frame-matched filter with a spread-spectrum receiver on a received spread-spectrum signal, the received spread-spectrum signal having a pilot-spread-spectrum channel generated from spread-spectrum processing a pilot-bit-sequence signal with a pilot-chip-sequence signal and a data spread-spectrum channel generated from spread-spectrum processing a data-bit-sequence signal with a data-chip-sequence signal, comprising the steps of:

programming said programmable-matched filter, responsive to a pilot-control signal, to set said programmable-matched filter to having a programmable-impulse response matched to the pilot-chip-sequence signal;

despreading, with the programmable-matched filter matched to the pilot-chip-sequence signal, the pilot-spread-spectrum channel as a despread-pilot-bit-sequence signal;

filtering, with said frame-matched filter having a frame-impulse response matched to the pilot-bit-sequence signal, the despread-pilot-bit-sequence signal;

generating from the filtered despread-pilot-bit-sequence signal, responsive to the despread-pilot-bit-sequence signal matching the frame-impulse response of the frame-matched filter, a peak-pilot-correlation signal;

generating, responsive to the peak-pilot-correlation signal, at a time delay from the pilot-control signal, a data-control signal;

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programming said programmable-matched filter, responsive to the data-control signal, to have the programmable-impulse response matched to the data-chip-sequence signal; and despread-  
despreading, with the programmable-matched filter matched to the data-chip-sequence signal, the data-spread-spectrum channel as a despread-data-bit-sequence signal.

2. The method as set forth in claim 1, with the step of despreading the pilot-spread-spectrum channel further including the steps of:

despreading, from the received spread-spectrum signal, an in-phase component of the pilot-spread-spectrum channel as a despread-in-phase component of the despread-pilot-bit-sequence signal; and

despreading, from the received spread-spectrum signal, a quadrature-phase component of the pilot-spread-spectrum channel as a despread-quadrature-phase component of the despread-pilot-bit-sequence signal.

3. The method as set forth in claim 1 or 2 with the step of despreading the data-spread-spectrum channel further including the steps of:

despreading, from the received spread-spectrum signal, an in-phase component of the data-spread-spectrum channel as a despread-in-phase component of the despread-data-bit-sequence signal; and

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despreading, from the received spread-spectrum signal,  
a quadrature-phase component of the data-spread-spectrum channel  
as a despread-quadrature-phase component of the despread-data-  
bit-sequence signal.

4. The method as set forth in claim 2 with the step of  
filtering the despread pilot-bit-sequence signal further  
including the steps of:

generating an in-phase-peak-pilot-correlation signal  
in response to the despread-in-phase component of the despread-  
pilot-bit-sequence signal matching an in-phase-frame-impulse  
response; and

generating a quadrature-phase peak-pilot-correlation  
signal in response to the despread-quadrature-phase component of  
the despread-pilot-bit sequence signal matching a quadrature-  
phase-frame-impulse response.

~~6~~ 6. The method as set forth in claim 1, further including  
the step of demodulating the despread-data-bit-sequence signal  
as a received data-bit-sequence signal.

~~5~~ 5. The method as set forth in claim 2 further including  
the step of demodulating an in-phase component of the despread-  
data-bit-sequence signal and a quadrature-phase component of the  
despread-data-bit-sequence signal, as a received-data-bit-  
sequence signal.

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Sub A → 7. A method, using a programmable-matched filter having a first plurality of taps and a frame-matched filter having a second plurality of taps with a spread-spectrum receiver on a received spread-spectrum signal to generate a code having a first plurality of chips, the first plurality of chips being equal to a product of the first plurality of taps and the second plurality of taps, the received spread-spectrum signal having a pilot-spread-spectrum channel generated from spread-spectrum processing a pilot-bit-sequence signal with a pilot-chip-sequence signal and a data spread-spectrum channel generated from spread-spectrum processing a data-bit-sequence signal with a data-chip-sequence signal, comprising the steps of:

generating a replica of the pilot-chip-sequence signal;

generating a replica of the data-chip-sequence signal;  
generating, responsive to a peak-pilot correlation signal, a pilot-control signal;

programming said programmable-matched filter to set the first plurality of taps of said programmable-matched filter to have a programmable-impulse response matched to the pilot-chip-sequence signal;

despreading the pilot-spread-spectrum channel as a despread-pilot-bit-sequence signal, each bit of the despread-pilot-bit-sequence having a second plurality of chips, a number of the second plurality of chips being equal to a number of the first plurality of taps;

outputting, on the basis of one output for every second plurality of chips, the despread-pilot-bit-sequence signal to the frame-matched filter;

filtering, with said frame-matched filter having a frame-impulse response matched to the pilot-bit-sequence signal, the despread-pilot-bit-sequence signal, each of the second plurality of taps of said frame-matched filter for correlating with a respective bit of the despread-pilot-bit-sequence signal;

generating a peak-pilot-correlation signal in response to a frame of the despread-pilot-bit-sequence signal matching the frame-impulse response of the frame-matched filter;

programming said programmable-matched filter, responsive to the peak-pilot-correlation signal, to have the programmable-impulse response matched to the data-chip-sequence signal; and

despreading the data-spread-spectrum channel as a despread-data-bit-sequence signal.

8. The method as set forth in claim 7, with the step of despreading the pilot-spread-spectrum channel further including the steps of:

despreading an in-phase component of the pilot-spread-spectrum channel as a despread-in-phase component of the despread-pilot-bit-sequence signal; and

despreading a quadrature-phase component of the pilot-spread-spectrum channel as a despread-quadrature-phase component of the despread-pilot-bit-sequence signal.

9. The method as set forth in claim 7 or 8 with the step of despreading the data-spread-spectrum channel further including the steps of:

despreading an in-phase component of the data-spread-spectrum channel as a despread-in-phase component of the despread-data-bit-sequence signal; and

despreading a quadrature-phase component of the data-spread-spectrum channel as a despread-quadrature-phase component of the despread-data-bit-sequence signal.

10. The method as set forth in claim 8 with the step of generating a peak-pilot-correlation signal further including the steps of:

generating an in-phase-peak-pilot-correlation signal in response to the despread-in-phase component of the despread-pilot-bit-sequence signal matching an in-phase-frame-impulse response; and

generating a quadrature-phase peak-pilot-correlation signal in response to the despread-quadrature-phase component of the despread-pilot-bit sequence signal matching a quadrature-phase-frame-impulse response.

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~~11~~. The method as set forth in claim 7, further including the step of demodulating the despread-data-bit-sequence signal as a received data-bit-sequence signal.

~~12.~~<sup>11</sup> The method as set forth in claim 8 further including the step of demodulating an in-phase component of the despread-data-bit-sequence signal and a quadrature-phase component of the despread-data-bit-sequence signal, as a received-data-bit-sequence signal.

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